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TITLE: Cement Composition Effects on Enamel Demineralization Adjacent to Orthodontic Brackets

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SESSION TYPE: Poster Session

CURRENT SCIENTIFIC GROUPS & NETWORKS: Cariology Research-Demineralization/Remineralization

ABSTRACT BODY:

Objectives: Incipient caries lesions or white-spot lesions are one of the most common clinical problems resulting from orthodontic treatment with fixed appliances. Literature has shown that PTR-LUM, used by The Canary System for caries detection, is capable of monitoring artificially created carious lesions and their evolution during demineralization. Recently, a water-based calcium aluminate glass ionomer luting cement (Ceramir) has shown bioactive surface apatite formation which may influence local remineralization. This in-vitro study's objective was to evaluate possible effects of a bioactive cement on enamel demineralization around orthodontic brackets compared to a composite resin cement.

Methods: A sample of 32 caries-free extracted human teeth (under an IRB-exempt protocol) was collected. Orthodontic brackets were cemented to each tooth with either Transbond XT or Ceramir. A 3x3 mm window adjacent to the bracket was created with acid-resistant varnish for an area to measure. Acetic acid (pH=3) was used as a demineralizing solution and distilled water as a control. The sample was randomized into 4 groups (n=8): Transbond XT in acetic acid, Ceramir in acetic acid, Transbond XT in distilled water, Ceramir in distilled water. Five (5) Canary scores (0-100, higher values indicating increased demineralization), were obtained at baseline (T=0), 2 days (T=1), 7 days (T=2), and 14 days (T=3). ANOVA and pair-wise post-hoc tests were used to analyze the data.

Results: Transbond XT (p=.0003) and Ceramir (p = .0001) showed significant demineralization around orthodontic brackets compared to the controls. The mean change in Canary score from T0-T3 for Transbond XT is 24.5±10.5, while Ceramir is 21.2±12.5, and this difference is not significant (p=.438).

Conclusions: This vitro study demonstrated the ability of PTR-LUM to monitor progressive enamel demineralization, in-vitro, around orthodontic brackets; and, within the limits of this preliminary study, demonstrated no significant difference in demineralization inhibition between the cements tested.

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TABLE FOOTER: (No Tables)

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KEYWORDS: orthodontics, brackets, demineralization, cement.

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AWARDS:

Group Author Abstracts - Abstract: (none)

Session Chair Volunteers - Abstracts: Not Interested

Special Scheduling Needs - Abstracts: (none)

Student Status - Abstracts: Masters Student (after professional degree)

Student Other Designation - Abstracts: (none)

Abstract Submission - Track Selection: Clinician Track